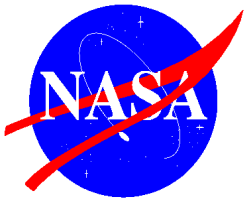

George C. Marshall Space Flight Center

Marshall Space Flight Center, Alabama 35812

ED27-CDL-FOP-008
BASELINE
JULY 29, 1999

FACILITY OPERATING PROCEDURE

ED27 / STRUCTURAL AND DYNAMICS TESTING GROUP

RESPONSE LIMITING SYSTEM

CHECK THE MASTER LIST—
VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		07/29/99	Document converted from ED73-CDL-FOP-008. Changes made to document are organizational and reference document numbers.

1. SCOPE

1.1 Scope. This facility operating procedure (FOP) provides instructions for the general operating procedures to acquire, monitor data, and limit response acquisition using the Keithley 500A, VIEWDAC Software, and the Response Limiting Control Hardware Mod #001 in the Modal and Control Dynamics Team(ED27) at the Marshall Space Flight Center.

1.2 Purpose. The purpose of this procedure is to define the steps necessary to set-up the Response Limiting System. This procedure will be used to assist in defining all necessary system inputs and pre-test checks.

1.3 Applicability. This procedure applies to the Response Limiting Control Panel Mod #001 and the Keithley 500A system used in the performance of dynamic and controls testing within the Modal and Control Dynamics Team (ED27).

2. REFERENCE DOCUMENTS

ED27-OWI-M&V-002 “Quality Records Control”

ED27-EMA-FOP-008 “Cabling Schematics for Hewlett Packard 9000 Computers with Hewlett Packard 3565 Measurement Hardware for Modal Surveys”

ED27-CDL-FOP-004 “Cabling Schematic for the Keithley 500A Data Acquisition System using the AMM2 and AIM3A Interface Cards”

Associated Equipment Manuals

Keithley DAC 500-Series Measurement and Control Systems Manual

Keithley ASYST VIEWDAC Reference Manual

3. DEFINITIONS

3.1 Sequence A VIEWDAC sequence is a collection of tasks and front panels. Sequences are designed to perform acquisition, to create virtual instruments, and control applications. A sequence can be thought of as a program, with the tasks analogous to subroutines. Sequences are edited and displayed through sequence windows.

3.2 Task A task is a sequence building block. Task are used to perform specific jobs; for example, an analog input task is used to acquire data and a numeric display task is used

to display data. The functional task categories and their associated tasks are include in the appendix.

3.3 Front-Panel A Front-Panel is a window associated with a sequence. All sequences create a front panel by default. The front panel allows the user to view and/or modify tasks while they are running.

3.4 AMM2 The AMM2 is the Master Analog Measurement Module which functions as a standard analog input module, selects and conditions analog signals from other analog input modules, and serves as a 16-bit A/D converter for all input channels. The AMM2 can accept 16 single-ended or 8 differential analog inputs.

3.5 AIM3A The AIM3A is a Analog Input Module which accepts 32 single-ended or 16 differential analog inputs.

3.6 AOM1 The AOM1 is a Analog Output Module which provides 5 channels of high-speed analog output. Each channel has an independent D/A converter.

4. INSTRUCTIONS

4.1 Verify that all instrumentation has been set-up and calibrated; with all transducer id's, calibrations, point numbers, and location numbers identified .

4.2 To activate the VIEWDAC software package change the VIEWDAC directory by typing cd c:\viewdac at the dos command prompt. Then type viewdac.

4.3 Open one of the following Response Limiting Control Sequence templates:

MON5_1.seq monitors 5 channels.
MON15_1.seq monitors 15 channels.
MON20_1.seq monitors 20 channels.
MON30_1.seq monitors 30 channels.
MON40_1.seq monitors 40 channels.

4.4 To verify that the Response Limiting Control Hardware is functional, connect a sine signal from a calibrated wave generator to the source input. Monitor the source input and output. Verify that both signals are identical. Select the push button labeled START in the sequence window. Then select the push button labeled START HI to send a D/A signal to cut the output source signal off. Verify that the output source signal is off and note on the Test-Set-Up Sheet. Reset the Response Limiting Control sequence file by selecting the push button labeled START LO.

4.5 Modify the data display and enter the appropriate data acquisition parameters for each test and data set. The VIEWDAC software package allows the user to create and edit data acquisition set-up parameters and data displays.

4.6 Enter the calibration values for each channel and set the threshold limit values for the response channels.

4.7 The measurement set-ups should be saved once completed.

4.8 Select the button labeled START on the sequence window to start the sequence file.

4.9 Select the button labeled ACQUIRE DATA on the data display to start monitoring the responses.

4.10 If the threshold limit values on any of the channels have been exceeded, the Response Limiting Control Hardware will halt the electrodynamic shakers. Note the response channel and response value for the channels that have exceeded the required threshold on the Test-Setup Sheet. Turn the HP9000 35655, HP3566 or HP3562 source signal off and reset the Response Limiting Control sequence file by selecting the push button labeled START LO.

4.11 Select the button labeled STOP on the sequence window to stop monitoring the responses.

4.12 Save data specified in the test requirements.

5.0 QUALITY RECORDS

5.1 The Test Set-Up Sheet . The Test Set-Up Sheet shown in the appendix should be filled out for every test and included in the test report.

APPENDIX A

VIEWDAC/KEITHLEY 500A
TEST SETUP SHEET
TSS-001

TEST ID:_____ DATE:_____

TASK NAME:_____ DAS DEVICE:_____

FILENAME:_____

START CHANNEL:_____ NO. OF SCANS:_____

NO. OF CHANNELS:_____ SCAN RATE:_____

CH#	DATA NAME	RANGE	SLOPE	OFFSET	UNITS

APPROVED: _____ **APPROVED:_____**
DYNAMICS ENGINEER TEST ENGINEER(ED27)

CONCURRENCE: _____
R&QA REPRESENTATIVE

REMARKS:

POST-TEST VERIFICATION

The Test and Checkout Procedure _____ has been satisfactorily been completed and documented.

Test Engineer Date

Quality Monitor Date